FOREIGN AGRICULTURE

Drying rice, PRC

September 6, 1976

Going Metric

U.S. Corn Exports

Foreign
Agricultural
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This week's cover:

Newly harvested rice being dried at the Chang-peng Brigade, Tung-kaun County, in the People's Republic of China. It is unlikely that the PRC's early 1976 rice crop will equal last year's because of unfavorable weather. See article covering PRC grain production starting on page 9.

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Metric System Taking Over In the United States

By ROBERT OWEN
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THE VICAR of St. Paul in Lyons, France, proposed it over 300 years ago. But not until recently has the world taken steps to adopt a common decimal measuring system using the fewest possible base measuring units—the metric system.

The metric system, in 1960 refined into the International Systems of Units (SI), is now in use or in the process of being adopted in most countries of the world, replacing the melange of archaic measurements that once dominated. The United States has been one of the last holdouts in this change, but here too the metric system is gradually coming into use.

Speeding the U.S. shift, President Ford on December 23, 1975, signed Public Law 94-168, which made the United States the last developed country to adopt the new SI system. That law states that the Government will plan and coordinate a voluntary changeover to the metric system—a shift already well underway in many industries. The U.S. automobile industry, for instance, plans to be completely converted by 1978, while the U.S. Government is organizing to convert as soon as possible—both the Interior and Agriculture Departments have 5-year targets.

Hopes are that the nation as a whole will be converted within 10 years, but unforeseen problems and the voluntary nature of the law could prevent realization of this goal.

The metric system is not new to the United States. An Act of Congress made it legal—but not mandatory—110 years ago. And the metric standards have served as the fundamental weights and measures of this country since 1893. However, without sufficient incentive to make the change, most citizens paid little attention to metrics.

The metric system itself dates back to 1790, when the French Academy developed measurements based on the size of the earth. The basic linear unit of that system was deemed a meter, or 1/10,000,000th of the distance from the equator to the North Pole at the meridian of Dunkirk. The standard for measuring the meter, in turn, became a bar of platinum-irridum alloy, held in storage at the temperature of freezing water.

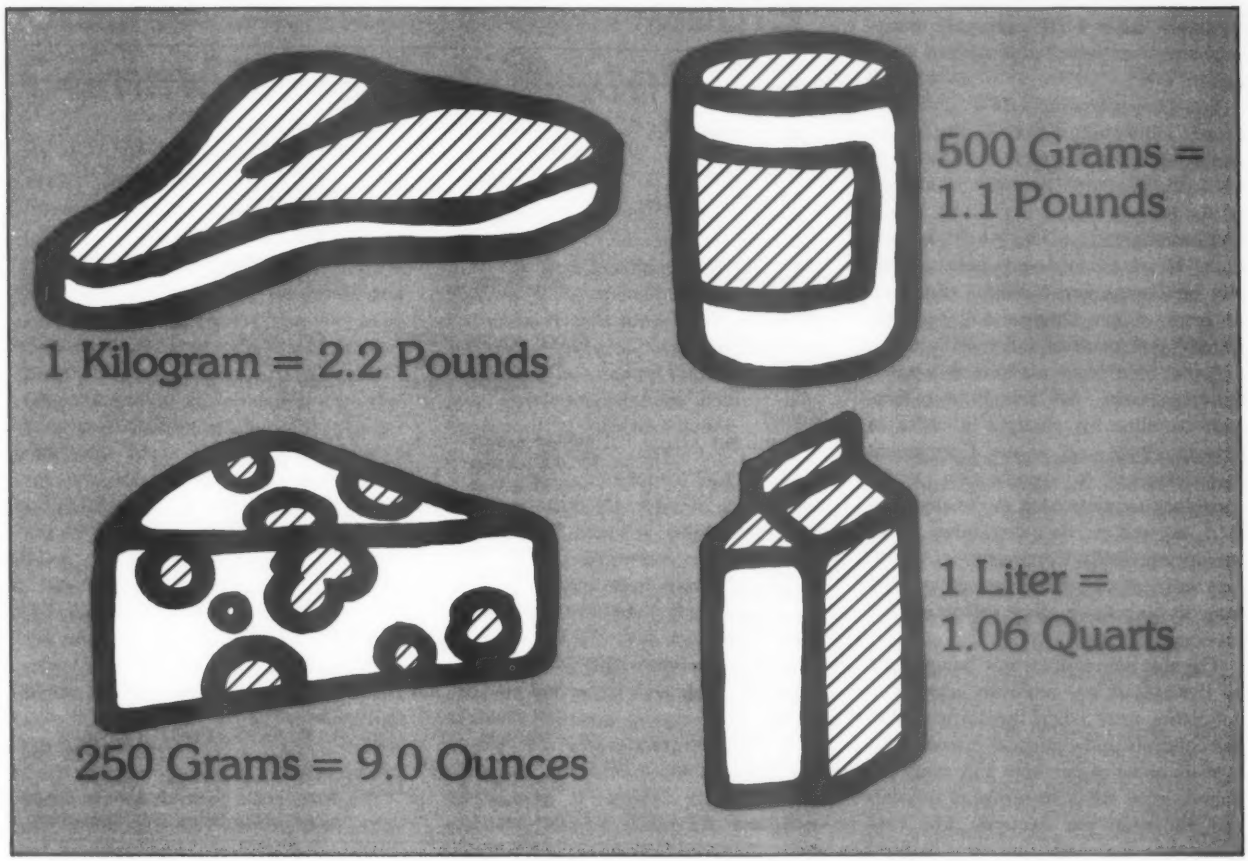
From this starting point, the Academy built a system of measurements that could be extended or reduced by multiplying or dividing by 10, or simply moving a decimal point. Thus the meter—still the basic metric unit for measuring length—when multiplied by 10,000 becomes a myriameter (6.137 miles) and when divided by 1,000 becomes a millimeter (0.0394 inch). Similarly, weight measures—starting at the gram—run as high as metric tons (1 million grams or 2,204.6 pounds) and as low as milligrams (0.001 gram or 0.0154 grains). And scientists have carried these extensions even further in the form of the micron (a millionth of a meter), the millimicron (1,000-millionth of a meter), and the Angstron unit, a 10th of a millimicron.

Several variations of the metric system have sprung up over the years, with the most recent—and now almost universally accepted one—the SI. The SI, often called the modern metric system, is made up of seven basic units:

- The second (abbreviated "s") to measure time;
- The meter (m) for length;
- The kilogram (kg) for mass;
- The mole (mol) for the amount of a substance;
- The kelvin (K) for thermodynamic temperature;
- The ampere (A) for electric current; and
- The candela (cd) for light intensity.

In addition, it includes two supplementary units: The radian (rad), for plane angle; and the steradian (sr), for solid angle.

Because of its simplicity, the metric system soon began to replace traditional measurement systems that were based largely on the human body and thus



lacked any rational means of conversion from one unit to another.

The inch, for instance, derives from the width of the middle joint of the thumb when pressed down (and later from the length of three dried barleycorns laid end to end). The foot was based on the length of a man's foot; the yard, on the distance from a man's nose to the end of his middle finger; and an acre, on the amount of land that could be plowed with a yoke of oxen between sunrise and sunset on the day of the summer solstice.

Hands still are used to measure the height of horses, and fingers the height of whiskey in a whiskey glass, but the palm, the span, the cubit, and the rest are now archaic.

Over the years, these units finally were given standard sizes, so that today 12 inches equal a foot, 3 feet a yard, and 4,840 square yards an acre, but converting from one to another is still a tedious exercise.

Hence the rapid rise of metrication at the expense of the American, British, and other tradition-bound systems of measurement. Even the once deeply ingrained British measurements—with their 5-quart gallon, 112-pound hundredweight, and other variations from the American system—are falling by the wayside now that the United Kingdom, Australia, New Zealand, and Canada have launched programs to convert to metric measurements. Their shift left the United States and a few developing nations dependent on traditional systems of measurements. Even without official action, the United States has been making the change piecemeal because of market pressures or in some cases because of the greater accuracy of metric measurements.

The next task is to implement the law, which not only will allow the United States to meet size requirements of a world market that is almost totally converted to metric measurements, but also is a more logical system of measurement.

Under provisions of the Metric Conversion Act of 1975, a United States Metric Board, composed of public members to be appointed by the President in the next few months, will coordinate the national changeover. This conversion will involve every person in the country and may well rank as the biggest single economic change ever attempted by the United States.

The Department of Agriculture has organized for the conversion by appointing a USDA metric coordinator, subcoordinators for information data and education, and a committee with representatives from every USDA agency.

Now conversion is being speeded as individual agencies make the easy soft changes. ("Soft" conversion involves the use of metric measurements in published data, while "hard" conversion refers to actual changes in hardware.) The Forest Service took the first official USDA action on March 15, 1976, with soft conversions in all of its research publications.

World trade data comprise a sector of easy conversion because most of this is gathered in metric form and users of the data are generally familiar with the metric system. Reflecting these factors, the Foreign Agricultural Service moved to total conversion of its output in July 1976, and the Economic Research Service expects to convert its world data ac-

cordingly. Most USDA scientific measurements were switched to metrics years ago.

The conversion of USDA domestic data of more common use by the farmer and consumer is expected to begin in 1977 after an extensive public familiarization program by the USDA's Office of Communication. The American National Metric Council and public schools will have concurrent public education programs. Later, changes will be made in USDA regulations and grading.

Some industries, particularly in the building trades, will require a nationwide deadline for changes in order to prevent chaos and waste. Component manufacturing to specification is the roadblock to conversion in the electrical field, as well as in many other hard-conversion fields. Obviously, a significant amount of USDA conversion will have to wait until other sectors of the economy are ready.

The soft conversions now being made by the USDA are relatively easy. The difficulties arise when the farmer, who has concepts and statistical memories of bushels or bales per acre and cents per pound, must think in terms of quintals and kilograms per hectares. The consumer has the same conceptual adjustment to make, but will probably make it more easily.

Why should the United States have to change its measurement system rather than having other nations change to the American system?

A simple look at the spread of the metric system provides the answer: The United States is just one of the many nations of the world, and all but three small nations have adopted the system.

This country also is a complex, industrialized nation vitally dependent on other nations both as sources for imports and as markets for exports—including the huge U.S. agricultural exports. As such, the United States must adapt to the standards of that marketplace if its trade is to continue to thrive.

Will agricultural producers have any long-lasting difficulties?

No. Scales and containers will have to be recalibrated. Otherwise, life will go on as before. In fact, it will be somewhat easier because of a resulting reduction in calculations.

Indeed, the next generation will probably find it hard to understand why Americans put up with the present awkward system as long as they did.

METRIC MEASUREMENTS AND THEIR U.S. EQUIVALENTS

Metric measure	Size[1]	U.S. equivalent
Length:		
Myriameter	10,000 meters	6.2137 miles
Kilometer	1,000 meters	.62137 mile
Hectometer	100 meters	328 feet 1 inch
Dekameter	10 meters	393.7 inches
Meter	1 meter	39.37 inches
Decimeter	.1 meter	3.937 inches
Centimeter	.01 meter	.3937 inch
Millimeter	.001 meter	.0394 inch
Area:		
Hectare	10,000 square meters	2.471 acres
Are	100 square meters	119.6 square yards
Centiare	1 square meter	1,550 square inches
Weight:		
Metric ton	1 million grams	2,204.6 pounds
Quintal	100,000 grams	220.46 pounds
Myriagram	10,000 grams	22.046 pounds
Kilogram	1,000 grams	2.2046 pounds
Hectogram	100 grams	3.5274 ounces
Dekagram	10 grams	.3527 ounce
Gram	1 gram	15.432 grains
Decigram	.1 gram	1.5342 grains
Centigram	.01 gram	.1543 grain
Milligram	.001 gram	.0154 grain
Capacity:		
Kiloliter or stere	1,000 liters	1.308 cubic yards
Hectoliter	100 liters	2.838 bushels; 26.417 gallons
Dekaliter	10 liters	1.135 pecks; 2.6417 gallons
Liter	1 liter	.908 dry quart; 1.0567 liquid qts.
Deciliter	.1 liter	6.1023 cubic inches; .845 gill.
Centiliter	.01 liter	.6102 cubic inch; .338 fluid ounce
Milliliter	.001 liter	.061 cubic inch; .271 fluid dram

[1] In terms of the standard metric units—meter, square meter, gram, and liter.

BIRTH OF THE METRIC SYSTEM

Some 100 years after the idea first surfaced, in the midst of the French Revolution and shortly after this country's own Revolution, the metric system was born.

It was the 1790's and government leaders on both sides of the Atlantic were anxious to replace the confusing array of weights and measures handed down by the Greeks, Romans, Anglo-Saxons, and Normans. In the new United States of America, George Washington spoke of the need for a standardized system of measurement; Thomas Jefferson later actually proposed one based on the swing of a pendulum; and John Adams weighed alternative forms of measurement in probably one of the nation's first economic surveys.

But it was the French, despite their preoccupation with the Revolution, who came up with a workable system that would eventually find almost universal acceptance. The new metric system was launched in 1790, when the French Academy of Science moved to carry out proposals of the French statesman Talleyrand. Provisional standards for the new system were adopted in 1795, and these were introduced to other nations at the end of the century in an international conference held in Paris. Some resistance subsequently set in, delaying France's official acceptance of the metric system until 1840, when its use was made compulsory.

Thereafter, the system spread rapidly throughout Europe, and then to other nations of the world. By 1900, 35 nations were using the metric system and in December 1975, the United States became the last developed nation to decide to go metric.

UNCTAD Conference Adopts Commodities Resolution

By JOANN HALLQUIST
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Foreign Agricultural Service

BEGINNING this month, the United Nations Conference on Trade and Development (UNCTAD) will hold meetings to propose measures to achieve the developing nations' goal of expanded participation in the marketing, distribution, and transporting of their commodities. These preparatory meetings are part of a commodities resolution adopted at the fourth ministerial meeting of UNCTAD in Nairobi, Kenya, in May.

The U.S. delegation, while joining in the consensus adoption of the commodities resolution, made it clear that it held major reservations about certain aspects of the resolution, namely:

- Participation in the commodity consultations does not imply commitment to negotiation of commodity agreements;
- Existing commodity groups, such as the Food and Agriculture Organization (FAO), would be utilized for the commodity consultations;
- U.S. participation in preparatory meetings on a common fund does not commit the United States to participation in the common fund negotiating conference; and
- U.S. reservations about indexation (a plan by which selected commodity prices would be geared to the prices of selected manufactured goods) remain unaltered.

Most of the commodities included in the resolution are agricultural—cocoa, bananas, coffee, hard fibers, cotton and cotton yarns, meat, jute, rubber, sugar, tea, tropical timber, and vegetable oils, including olive oil and oilseeds. It covers all major agricultural commodities, except grains and dairy products, and includes fertilizer (phosphates) and a number of minerals. However, additional commodities can be added later.

The commodities resolution takes its inspiration from the New International Economic Order, with which the United States disagrees, adopted by the United Nations General Assembly in May 1974. This called for a program to establish new structures in commodity trade, particularly those of interest to developing countries. It calls for a new commodity marketing system, with commodity agreements as a central feature. It would give developing nations control over production of their commodities, as well as higher prices.

The resolution adopted by UNCTAD does not explicitly refer to indexation. However, it does list, among its objectives, the stabilization of commodity prices at levels that "take account of world inflation and changes in the world economic and monetary situation," and the improvement of "real income of individual developing countries through increased export earnings."

Also included among the objectives of the UNCTAD resolution were improvements in market access, supply reliability, market structures, and competitiveness of natural products with synthetics and substitutes.

The individual preparatory commodity meetings are scheduled to propose the necessary measures needed to achieve these objectives, determine financial requirements, recommend followup action, and prepare draft proposals of commodity agreements. If recommended, the preparatory meetings are to be followed by commodity negotiating conferences.

In addition, the resolution sets a timetable for negotiation of a common fund to finance "buffer stocks" for use in supporting minimum and maximum price levels. The developing nations at the Nairobi conference sought endorsement of the fund as their primary aim. In the compromise acheived during the closing hours of the Conference, the industrialized nations agreed to a two-phase timetable: Preparatory meetings to be followed by a negotiating conference, the latter taking place no later than March 1977.

In a show of their determination to establish a common fund, more than 20 countries—mainly from the developing world—pledged to contribute to a common fund. Pledges totaling $155 million were made by the Philippines, India, Indonesia, Norway, Yugoslavia, and Kenya. Norway and the Netherlands were the sole developed countries to pledge unspecified amounts.

The U.S. approach to commodity agreements has remained a case-by-case approach. In the upcoming series of commodity consultations, the United States will have to vigorously define its interests against strong efforts by the developing countries to negotiate commodity agreements. Only the United States and West Germany voiced strong reservations on the resolution at Nairobi.

While the ideas and goals of the commodities resolution are not new, what is novel is the progress developing countries have made in mobilizing the voting power to push their ideas through to implementation. They have also succeeded in getting industrialized nations to agree with some of their goals.

For the United States and many other industrialized nations, the General Agreement on Tariff and Trade (GATT) has long been the chosen instrument for trade negotiations and consultations. The developing countries, on the other hand, have expressed a strong preference for UNCTAD, as opposed to GATT. Many of the agricultural commodities involved are the subject of negotiations in GATT, and many of those of interest to the developing countries are under consideration in the tropical products group of the Multilateral Trade Negotiations (MTN).

While the negotiations efforts in GATT and the MTN are to reduce trade barriers, the commodities resolution, if carried to its conclusion, would result in increased trade barriers, such as expanded use of production and export controls.

Some of the developing countries have been major growth markets for U.S. agriculture in recent years, and the developing countries, in turn, are highly dependent on the United States for imported food. Considering that the United States sells approximately 40 percent of its agricultural exports to developing countries, and is the single most important market for their agricultural exports, the U.S. agricultural community and consumers have a vital stake in the outcome of the UNCTAD commodities program.

Japan-PRC Trade Emphasis Shifts to Oil

By BRYANT WADSWORTH
Former Assistant U.S. Agricultural Attaché
Tokyo

ALTHOUGH AGRICULTURAL trade between Japan and the People's Republic of China (PRC) held steady in 1975, its share of Japan's total imports from the PRC dropped 34 percent owing to the emergence of oil as a significant import item.

Japan's total exports to the PRC rose 15 percent in 1975 to $2.2 billion from $1.9 billion in 1974. Imports from the PRC also rose 19 percent above the $1.3 billion figure of 1974 to $1.5 billion. However, these gains are low compared with the trade surge between 1973 and 1974, when Japan's exports to the PRC rose 105 percent and imports went up 44 percent.

The relative importance of agriculture in Japan-China trade has declined since the two countries normalized relations in September 1972, with the sharpest declines coming in the past 2 years. Whereas agricultural commodities accounted for 56 percent of Japan's total imports from the PRC in 1972 (value basis), they accounted for only 22 percent in 1975.

This fact reflects, among other things, a sharp increase in imports of crude oil and other nonagricultural items. The value of petroleum exports from the PRC to Japan rose 80 percent from $411 million to $740 million in 1975. The PRC, on the other hand, is Japan's largest export market for fertilizer, particularly nitrogens. Exports in 1975 rose 112 percent to $317 million from $149 million in 1974.

Lowered gains in agricultural imports also reflect Japan's development of new import restrictions on raw silk and silk product imports. In August 1974, Japan established a so-called one-window raw silk importing corporation, called the Japan Silk Corp., to protect its sericulture farmers from foreign competition.

Authority to handle all raw silk imports gave this corporation a major role in reducing raw silk imports from over 14,000 metric tons in 1973 to 9,000 in 1974 and 1975. As a consequence, imports of silk yarns and fabrics, neither of which fell under the purview of the Silk Corp., increased sharply—200 percent over 1974 figures—to 8,300 metric tons. This has led the Government of Japan to move toward a broadening of Japan Silk Corp. authority to cover these commodities.

In other trade figures, on a quantity basis, imports from the PRC declined sharply for rice (off 56 percent), for which Japan also has import restrictions, fresh grapes (96 percent), rice bran oil (100 percent), fishmeal (100 percent), eggs and egg products (28 percent), and tung oil (26 percent).

Quantity increases occurred in wool (up 824 percent), cotton textiles (111 percent), peanut butter (135 percent), buckwheat and sorghum (129 percent), feedstuffs (60 percent), and honey (53 percent).

The PRC, however, has had difficulty in supplying certain agricultural commodities. A case in point is raw cotton. Although the PRC supplied 8,600 metric tons in 1975, this situation was something of an anomaly, the result of high Chinese stocks of cotton. With lowered stocks in late 1975 and early 1976, however, Chinese cotton exports to Japan have dropped off.

JAPAN: SELECTED AGRICULTURAL IMPORTS FROM THE PRC, 1974-75

Item	Quantity		Change
	1974	1975	
	Metric tons	*Metric tons*	*Percent*
Live animals	3	3	0
Meat[1]	9,138	11,606	+ 27
Eggs and egg products	7,709	5,588	− 28
Hides and skins:	270	257	− 5
Horse hides	146	18	− 88
Goat skins	—	186	—
Mink skins	—	—	—
Leather	15	24	+ 60
Tanned furs and skins	357	316	− 11
Grains and cereal preparations:	110,906	132,680	+ 20
Rice (mochigome)	28,738	12,513	− 56
Corn	65,246	81,658	+ 25
Buckwheat and sorghum	16,101	36,943	+129
Feedstuffs:	53,205	85,342	+ 60
Soybean cake and meal	1,524	200	− 87
Fishmeal	153	—	−100
Oilseeds:	248,493	257,829	+ 4
Peanuts	12,801	13,178	+ 3
Soybeans	231,894	239,820	+ 3
Animal and vegetable fats and oils:	7,660	5,169	− 33
Tung oil	6,582	4,860	− 26
Rice bran oil	87	—	−100
Fruit and vegetables:	88,798	89,778	+ 1
Grapes, fresh	230	10	− 96
Raisins	1,360	1,424	+ 5
Peaches, canned	618	92	+ 15
Beans, dried	30,125	26,370	− 12
Honey	4,766	7,281	+ 53
Peanut butter	630	1,480	+135
Tobacco, unmanufactured	1,906	3,682	+ 93
Natural fibers:	18,019	36,834	+104
Silk, raw	3,099	4,639	+ 50
Wool, greasy	147	1,358	+824
Cotton, linters	1,698	2,079	+ 22
Cotton, raw	—	8,598	—
Cotton textiles:	7,528	15,919	+111
Cotton yarn	3,140	4,924	+ 57
Cotton fabric, grey	668	325	− 51
Cotton fabric, excluding grey	3,720	10,671	+187

[1] Not fresh. Source: Customs Bureau, Ministry of Finance.

Bumper U.S. Corn Crops Spur Expanded Exports

By RICHARD E. BELL
Assistant Secretary of Agriculture, International Affairs and Commodity Programs

THE UNITED STATES will export a record 1.7 billion bushels of corn in the 1975/76 marketing year ending next September 30—an amount nearly equal to the total quantity of corn produced in Indiana and Illinois in 1975.

American farmers produced a record crop in 1975 and will produce another record crop in 1976. About 60 percent of all corn sold off farms from the 1975 crop will end up in export markets.

Exports will account for about 30 percent of total utilization of U.S. corn in 1975/76. In 1970/71, exports accounted for only 11 percent.

Corn exports go to only a few major markets. In nearly all cases, corn is purchased for use in livestock feed, although a few Latin American countries buy it for food use. Some buyers also use it for manufacturing industrial products. Since an overwhelming percentage does go for livestock feed however, U.S. corn growers have a direct interest in the economic health of the livestock industries in those countries that are key export markets for U.S. corn.

The largest export market for U.S. corn by far in Western Europe. We expect to export 620 million bushels—about 15.7 million metric tons—of U.S. corn to Western Europe in 1975/76. This is more corn than was produced in all of Indiana last year. Western Europe usually accounts for about 45 percent of all foreign purchases of U.S. corn.

The European Community (EC) is the dominant overseas market for U.S. corn. In 1975/76, we expect to export 435-440 million bushels (about 11.1 million metric tons) of corn to EC countries. This will be a record quantity, although not much more than the quantity the EC usually takes. The EC is a steady buyer of U.S. corn, taking on average around 400 million bushels or between 10 million and 10.5 million metric tons a year.

Although the EC is a steady buyer of U.S. corn, it is non-EC countries that have been the growth markets in Western Europe in recent years—especially Spain, Portugal, and Greece. We expect to export about 180 million bushels—4.6 metric tons—to non-EC countries in Western Europe in 1975/76, which will be more than double the quantity we exported to those countries 5 years ago.

Japan in most years is the second largest export market for U.S. corn, and the largest single-country market. We expect to export around 235 million bushels—or 6 million metric tons—to the Japanese in 1975/76, which will be 13 percent higher than last year. In addition to corn, Japan usually buys 100-200 million bushels (2.5-3 million metric tons) of grain sorghum each year from the United States.

Although Western Europe and Japan are the old, baseline export markets for U.S. corn, it has been new markets in the Soviet Union and other Communist countries of Eastern Europe that have enabled the United States to gain a stance of full production for corn.

With minor exceptions in earlier years, the American corn grower did not have access to the Soviet corn market until the summer of 1972. In 1975/76, the Soviet Union will be the largest export market for U.S. corn. We expect to export 475 million bushels—12 million metric tons—of U.S. corn to the Soviet Union in 1975/76.

U.S. corn exports to Communist countries in Eastern Europe other than to the Soviet Union are expected to total 150 million bushels—3.8 million metric tons—in 1975/76. This will more than triple the level of 5 years ago.

About 15 percent of all U.S. corn exports go to countries other than Japan, the Soviet Union, or those in Eastern and Western Europe. Among these other markets are South Korea, the Republic of China, Canada, and Mexico. Mexico imports U.S. corn mostly for food use rather than for feed. South Korea and the Republic of China have been among the fastest growing export markets for U.S. corn in recent years.

Export markets do not just happen. They must be developed. During the past 10 to 15 years, American farmers and exporters have worked hard to develop overseas markets for U.S. corn. Much of this has been done in the private sector, but the work of the U.S. Feed Grains Council in cooperation with the U.S. Department of Agriculture's Foreign Agricultural Service has also played a crucial role in helping transfer U.S. livestock feeding technology to countries with potential to buy large quantities of U.S. corn on a regular basis.

This past spring, American farmers planted 84.1 million acres to corn. The coming 1976 corn crop is presently forecast at 6.55 billion bushels.

Corn exports will be large again in 1976/77, although not as great as in the record 1975/76 year. At present, USDA is projecting 1976/77 corn exports at 1.5 billion bushels. If attained, this will be the second largest export level on record.

The decline from the 1975/76 level will be primarily because of an anticipated reduction in exports to the Soviet Union. Corn exports to the Soviet Union were exceptionally large in 1975/76 as a result of the disastrous grain crop there in 1975. Unless the present weather pattern changes over the Soviet Union, corn exports to the USSR during 1976/77 will be nearer the usual annual rate of around 150-200 million bushels, or 4-5 million metric tons.

WE, OF COURSE, have already sold 104 million bushels (2.65 million metric tons) of corn to the Soviet Union for delivery out of our 1976 crop. We have also sold the Soviets 65 million bushels (1.8 million tons) of wheat and 55 million bushels (1.5 million tons) of soybeans for delivery from our 1976 crops.

Under terms of the Long-Term Grain Supply Agreement concluded with the Soviets last October, they will need to buy additional quantities of both corn and wheat from our 1976 crops. They are obligated to buy for shipment each year of the agreement a minimum of 118 million bushels of corn and 110 million bushels of wheat (3 million

Continued on page 12

Based on remarks before Indiana Corn Growers Association, Purdue University, July 22.

Thai Cattle Industry Sees Future Growth

By GUY L. HAVILAND, JR.
Former U.S. Agricultural Attaché
Bangkok

Unloading U.S. cattle at the Bangkok airport in February 1975. This was part of the largest shipment of U.S. cattle ever sent by air to Thailand.

THAILAND HAS BEEN an important Asian exporter of live cattle for many years, but only now is beginning to make the kind of development input that will allow the industry to take advantage of the country's potential for growth.

Some 400 head of Brahman breeding cattle were imported in 1975, mostly from the United States, and with part of a World Bank loan plans to import several hundred more in 1976, as well as 144,000 vials of Brahman and Holstein semen. The loan will also go toward upgrading 83,000 hectares of Thai pasture to permanent grazing lands.

Much of Thailand's area is natural grassland ideally suited to provide native or improved pastures for livestock.

The northeast section of Thailand constitutes what is known as a rain shadow area. The annual rainfall of this area averages less than 60 inches, but could provide abundant grass.

There are approximately 40 million hectares of land in the northeastern and north-central plateau areas of Thailand that might be suited for cattle production. The changeover from farming to ranching would be easy to accomplish since only about 25 percent of this large area is now used to raise crops. An additional 2 percent is unusable swampland.

In addition, Thailand produces large quantities of corn, grain sorghum, soybeans, rice, tapioca, and molasses that could be used for fattening cattle. Even much of the waste materials such as corn and sorghum stalks could be used for animal feed ingredients if the cattle feeding proves economically feasible.

These materials are now mostly burned or ploughed under instead of being used for cattle feed, even during the dry season. In fact, Thailand annually burns enough crop waste materials to feed its present cattle production.

Thailand's cattle industry historically has ranked second in value after crop production but generally has not been geared to the production of beef. Domestically, it has been mainly a source of draft animals—particularly oxen—for Thailand's farmers and slaughter usually takes place only after the cattle are too old to produce calves or are too weak for farm work.

Most farmers outside the Central Plains—Thailand's most productive rice area—own small herds of cattle, either individually or jointly with neighbors. Under this system of ownership, future Thai feedlots would have to function like the U.S. "custom feeding systems."

Hong Kong has been the most important market for Thai cattle, taking as many as 2,000 to 3,000 head in some months. Singapore has also become an important market.

Strong demand for live cattle by these markets caused Thailand's domestic cattle prices to rise rapidly in 1972 and 1973. This created in the minds of officials the belief that a cattle shortage had developed in Thailand. As a consequence, in early 1974 the Thai Government restricted exports of live cattle and buffalo, seriously affecting the country's foreign exchange earnings. In mid-1975, Thai cattle exports were stopped and Thai domestic prices again fell. Limited exports of live cattle are now being allowed.

While the Government's loosely controlled cattle export program did not result in a smaller national herd, it did cause many of the better breeding cattle to be exported. Cattle exporters paid ocean freight charges based on the number of animals shipped rather than their individual weights, and the importers coincidentally demanded that heavier and larger animals be shipped. This caused a general decline in the quality of the remaining stock.

In recent years the Thai Government has come to recognize the need for higher quality breeding stock and improved livestock management practices, and has begun to import breeding animals, especially Brahmans.

IMPORTED BRAHMAN bulls will be used in an artificial insemination program and male offspring of the imported cows will be put at stud in a lending program that will make available good-quality bulls to small farming villages.

The Livestock Department of the Thai Ministry of Agriculture believes that this program will strengthen present breeding lines, produce cattle having a faster growth rate, and result in larger beef animals for export, and in draft animals that will pull heavier loads on the farm.

(The Thai Government also plans to improve the country's small dairy industry by crossbreeding some 30,000 dairy cows by artificial insemination. It is believed that in 3 to 4 years such

a program would double Thailand's milk production—now meeting only a small portion of the country's requirements.)

Improved pastures, with their increased feeding capacity, should lead to a significant growth in the country's cattle population. This, in turn, would probably permit cattle exports to be started again, thereby improving the country's foreign exchange earnings situation. Also, the increase in beef cattle numbers, combined with a heavier carcassed animal, would permit farmers to send more meat to Thai cities where demand is growing. This would strengthen farm incomes from domestic beef sales.

However, Thailand's beef animal expansion program could be slowed by one serious roadblock. Land reform measures have limited to about 20 hectares per family holdings devoted to livestock production. Even with the above-average grass conditions found in many areas of Thailand, the land restriction might deaden any incentive for farmers to increase herd sizes. But, higher prices for meat and draft and export cattle might overcome this obstacle.

Thailand might have other difficulties expanding its cattle shipments to export markets beyond its restricted Asian area. Certain cattle diseases are endemic in Thailand and its live animals and meat products are not permitted in many of the world's largest red meat markets.

Despite these limitations, the Government of Singapore, in an effort to assure a continuous supply of red meat for its growing population, has suggested to the Thai Government that the two countries establish a joint ranching project in south Thailand, with all the cattle produced going to Singapore. One feature of the ranch would be a feedlot where waste products from domestic corn, sorghum, tapioca, molasses, and soybeans could be used for feed.

Should the two Governments reach an agreement on this project, it is probable that the ranch would be stocked with offspring of breeding stock imported from the United States.

The Hong Kong Government is also anxious to purchase several thousand head of Thai cattle monthly and might sign a long-term contract in order to assure a steady supply of live animals.

PRC Grain Prospects Less Promising Than Last Year's

By MARION R. LARSEN
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PROSPECTS FOR agricultural production—particularly of grain crops—in the People's Republic of China (PRC) by the end of July were a little clearer and less promising than earlier in the year. It has been a perplexing period for estimating PRC crop output, nevertheless, a good harvest appears probable. Official preliminary harvest claims put summer harvested grains at or near record levels, but output of later harvested grains remains in question.

(The PRC's early grain crop is usually harvested before August 8 and includes summer harvested grains—those planted last fall—and spring wheat and early rice—planted this spring.)

The evaluation by officials of the effect of abnormal weather on crops and cropping operations, reported from Peking by the New China News Agency (NCNA) on June 8, 1976, and some on-spot observations of some crops by Western travelers indicate that the total early grain harvest may be down somewhat in 1976, compared with the past few years.

If true, a much greater effort will be necessary than in past years during the season of the late harvest to wrest a total crop equal to the USDA estimate of 280 million tons (including 10 million tons of soybeans) harvested in 1975, even assuming favorable weather.

This assessment resulted from the June 8 announcement that "the weather in most parts of China was very abnormal" during "last winter and this spring" and that "many natural disasters, including a cold spell, continuous rainfall, frost, hailstorms, dry spells, and drought have made it difficult for spring sowing." The report also stated that "various parts of south China were hit by a long cold spell and continuous rainfall when the peasant masses were engaged in cultivating early seedlings. Seedlings in most localities suffered serious damage, thus delaying the transplanting season."

Despite these problems, because of "rush-sowing in Hunan and Kwangtung Provinces—where seedlings suffered fairly serious damage—the total acreage devoted to the early rice crop has increased over last year's." This increase was to be expected since similar weather problems in this area in 1975 blunted anticipated gains in the 1975 early rice crop.

In a subsequent report (NCNA, June 10, 1976), it was claimed that "in northern China sowing of such crops as maize, sorghum, millet, and soya beans is finished and the young shoots are already lush green. Young cotton plants are also coming up sturdily in both southern and northern China." One description of crops in the report indicates that many were somewhat behind schedule.

By the time the spring farming tasks were completed, the season was well advanced. Timeliness of farming operations under conditions of multiple cropping is especially critical, resulting, in many instances, in the planting of fast-maturing catch crops as a substitute for the primary crop. This may have happened in the fall of 1975 when an increase of 670,000 hectares was claimed to have been sown to winter crops under adverse weather conditions.

Also, it is not known how much substitution of the usual crops became necessary this spring because of the delays in spring planting. Claims that crash planting of early rice in some areas of south China resulted in both "faster speed" and "better quality" or that an increase in total acreage over 1975 was attained, do not appear to compensate for probable shortages in other early rice-growing areas.

Thus, this year's early harvest grains have not had as favorable weather conditions since planting time as in 1975.

The effect of the weather, particularly in the drier areas in northern sections, is estimated to have been about offset by the largest water conservation and capital improvement projects to date, in which 130 million peasants participated during the past winter. This year

may provide the severest test of the PRC programs for water conservancy management and combating dry conditions, the need for which was intensified by cold weather. Expanded and early irrigation apparently saved winter wheat crops in many of the drier sections in the northern and western producing areas. Reportedly, some wheat fields in southern Hopeh Province were irrigated up to eight times. In areas around Peking and southern Hopeh Provinces, where small rivers and some wells dried up and where the water table dropped, peasants supplied supplemental irrigation by means of bucket brigades.

The winter wheat and other winter crops have been gathered from expanded acreage and harvesting of spring wheat and early rice belatedly is under way. Some official preliminary reports on harvest results indicate a good crop of winter grains (also called summer-harvested grains), of which wheat is the most important. Initial reports indicate that most of the 24 provinces, municipalities, and autonomous regions that grow summer-harvested grain crops (10 were enumerated) had a larger harvest than in 1975, while only a few had harvests equal to or less than the 1975 record crop. (By comparison, a report describing the summer-harvested grains in 1975 indicated that 19 of 24 Provinces registered gains.)

THE LARGER summer-harvested grain-producing provinces, which account for over half the total wheat area (Shantung, Honan, Anhwei, Kiangsu, and Hopeh), claimed large increases over the 1975 crop. Other province-level units, including those in Hunan, Kwangtung, Liaoning, Chekiang, Kweichow, Sinkiang, Shanghai, and Peking, also reported increases.

The combined acreage of these province-level units brings their total acreage to over 60 percent of total wheat acreage. Based on these claims it is possible that winter wheat production equaled or exceeded the record crop of 1975. However, officials did not single out winter wheat or total wheat as reaching record levels so far this year.

About 15 percent of the summer-harvested area included barley and naked barley with the winter wheat in the official figure (referring to the crops as the three wheats). That area (Kiangsu and neighboring Provinces) is a large producer of winter barley. The Provinces mentioned above had fewer weather problems than those to the west and southwest.

The possible shortfall in spring wheat—because of bad weather and an apparent decline in acreage—is expected to keep the output of the total wheat crop about equal to the 1975 record. If this occurs, it will be primarily because of the vast development of irrigation facilities in the marginal areas of rainfall where winter and spring wheat are grown has been able to sustain crop growth under conditions of inadequate rainfall so far this year.

The other winter grains—primarily barley, naked barley, oats and pulses—probably fared better than winter wheat and may have been substituted for winter wheat in some areas because of the unfavorable weather conditions at planting time. The production of total winter grains thus appears likely to have exceeded that of 1975.

The early rice crop remains a question. Fairly favorable weather followed the disruptions in planting, transplanting, and retransplanting, which were caused by prolonged rainfall and cloudy skies throughout much of the early rice area, during the unusually late (and persistently cold) spring in the south, has been a boon to rapid growth. However, it is doubtful that the crop, which is also behind schedule of growth, will equal last year's crop, which was below expectations and which also was affected similarly by unfavorable weather. The claimed increased acreage, planted later than usual and with spotty stands in some areas, may not be sufficient to offset declines in yields caused by the earlier bad weather.

A July 14 radio conference in Canton disclosed that the harvest of early rice in Kwangtung Province (the leading producer), for example, had been "postponed" (due to late planting in the spring), that the late rice season was "still more pressing," and that the "quantity of various types of manure collected and green manure planted in various areas for the late rice crop is less than in the corresponding period of last year."

A massive effort, including large inputs of urban laborers, was needed to bolster peasant efforts in eliminating insects, controlling flooding in the Hsi and Pearl Rivers, harvesting the early rice crop and, simultaneously, preparing the

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Dutch Farm Groups Meet Labor Needs In Crises

By CHRISTIAN J. M. LANGEZAAL
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MANY DUTCH FARMERS are trying to compensate for the shortage of farm laborers by joining farmer-help associations that make available part-time farm workers in times of need.

Laid out on regional lines, the associations have a standing pool of laborers that can be hired by farm owners when needed. When not needed on the farm, the associations puts the laborers on a sort of stand-by status, but continues to pay their wages so they will be immediately available when needed again. However, in most instances, the demand for the laborers is so great that they are seldom idle.

The first of the Netherlands farmer-help associations was founded in Friesland Province in 1960 as one solution to the type of crisis that arises when a sick farmer is unable to work his land, or to call on his family or neighbors for help.

Although at first faced with a myriad of organizational and financial problems, the original group was soon followed by others and by 1974 more than 29,100 farmers had banded together into 174 associations, with a roster of some 400 laborers.

In the movement's early days, organizers of each association faced the same problems of paying and housing personnel, working out tax matters with local collectors, providing farmers with administrative support, and recruiting labor so as to meet the demand for assistance that varied from season to season from a pool of laborers that also fluctuated. The early participants, with their limited means and experience, clearly saw the need for an interchange of information between the various organizations so as to adopt standardized practices.

Later it was realized that a central

Disabled Dutch farmer discusses work schedule with laborer provided to help during the crisis by a local farm-help association. In 1974, more than 29,100 farmers had joined 174 such groups. Some 400 laborers were on call.

organization—a federation of associations—was needed to coordinate the program of the individual associations, to assist in the forming of new ones, to recruit and train farm laborers, to standardize wage policies, and to provide an interchange of workers between the various groups so as to insure the laborers of full-time employment. By 1963, there were seven federations scattered throughout the country.

The most pronounced period of growth of the farmer-help associations was in the late sixties. Between 1965 and 1970 the number almost doubled—going from 107 to 208—while the number of members soared from 19,098 to 28,133. The number of laborers nearly tripled in the same period to 332 in 1970.

After 1970, there was less rapid development, and structural changes began to take place. Mergers caused the total number of associations to drop to the 174 recorded in 1974, but the larger units were able to provide a wider range of services.

ALTHOUGH THERE IS a general and continuing exodus from agriculture, the number of association laborers is still increasing, but at a slower rate than in the early days of the movement.

The one problem that was largely unsolved in the early days was that of providing adequate financing. Only the Friesland federation—whose membership was exceptionally large—could afford a full-time secretary with a proper office, and make provisions to finance his activities. In other parts of the country, the associations were short of operating funds, but hesitated to increase dues because they feared they would lose members.

On January 1, 1965, the Netherlands Government—recognizing the important social benefit to large groups of farmers—came to the rescue of the wavering movement and agreed to pay a large share of the expenses of the seven federations then in existence, Government funding provided for 90 percent of a federation secretary's salary, 90 percent of its overhead expenses to a maximum of $2,365 a year, and a maximum payment of $4,200 for idle time of laborers of member associations.

These provided a sound basis for further expansion of the movement and the number of associations steadily increased. By 1965 there were about 100 with 19,000 members. Five years later the number of associations had risen to 200 and membership to 28,000. Between 1965 and 1970, farmers began to realize the availability of association laborers would enable them to take vacations, while access to technician-laborers—many of them skilled in such crafts as carpentry, welding, bricklaying, and concrete work—would enable farm owners to undertake projects that previously had only been dreams.

But these activities made it necessary for the associations to provide a larger manpower pool. And hiring more workers meant paying for larger amounts of idle time. But again the Government came to the aid of the movement and on January 1, 1971, agreed to continue at the same level its payments for secretarial salaries and office overhead but to revamp its payments schedule for laborer idle time based on the number of association members and laborers.

Also in 1971, a move toward greater centralization became apparent. This enabled the associations to consolidate many activities and cut costs.

On May 1, 1974, the Dutch Government adopted a subsidy program to make it easier for associations to hire foremen. At the same time, the other subsidy programs were reviewed. The outcome was that subsidies for secretarial salaries and office overhead costs remained unchanged, and a one-time subsidy of $3,600 was made to each association with at least 250 members and 8 laborers, plus a one-time payment of $5.75 for each additional member and $718 for each additional laborer. The maximum payment was $10,925.

Member farmers pay annual association dues and an hourly wage for the services of skilled or unskilled laborers. Dues and wages in various parts of the Netherlands vary, but the ultimate aim is to adopt a standard wage schedule for the entire country.

IN THE PROVINCE of Friesland, for example, annual dues amounted to $24.20 in 1974. Hourly wages paid to laborers were $6.09 for regular farmwork or to operate a farm while the owner was on vacation. By paying extra dues of $42 per year—amounting to a sort of health insurance payment—a farmer got a reduction in labor costs of $1.68 an hour in case of illness, bringing his payment to $4.41 an hour, with the reduction taking effect after 1 week and continuing, if necessary, for a year.

Relatively, the use of laborers to assist sick farmers is slowly declining, however. A recent survey shows that about 80 percent of the work hours of farm laborers in Friesland is used for specialty jobs such as building structures, laying cement floors, and welding broken farm machinery, substituting for a farmer on vacation, or helping a farmer in the normal operation of his plant. Only the remaining 20 percent is normally used to aid sick farmers.

For 1975, the Dutch Government set aside $2.5-$2.9 million dollars to subsidize hourly wages for laborers working for sick farmers. In addition to the Government subsidy, the farmer pays only between $1.90 and $2.10.

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Bumper U.S. Corn Crops

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metric tons of each).

It is important to note that the Soviets have bought 11 million metric tons of U.S. grain and soybeans since the long-term agreement was concluded last October. The agreement is clearly working. It has given American farmers a long-term market for grain in the Soviet Union. At the same time, the more evenly spaced Soviet purchases have eased consumer and public fears regarding the impact of large-scale Soviet purchases of grain on the U.S. market.

Part of the decline in U.S. corn exports to the Soviet Union in the upcoming year will be offset by larger U.S. exports to Western Europe, which is suffering severe drought. U.S. corn exports to Western Europe in 1976/77 are presently expected to be 700-750 million bushels, or 18-19 million metric tons. This will be 80-120 million bushels —or 2-3 million metric tons—more than in 1975/76.

Japan is also expected to take more U.S. corn in the coming year. U.S. corn exports to Japan in 1976/77 are presently expected to be about 250 million bushels or 6.3 million tons. This will be 10-15 million bushels more than in 1975/76.

Corn exports to Eastern Europe in 1976/77 will remain at a relatively high level—at least as high as in 1975/76. No major changes are expected in exports to other markets.

PRC Grain Prospects

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land and transplanting the late rice crop. Bumper harvests were contingent on the success of these undertakings.

The combined output of the early-harvested grains, representing about 40 percent of total grain production, thus appears less likely to equal the record level of last year, when the early harvest contributed substantially to the PRC's record total grain crop. This situation places an even greater burden on the late grain harvest.

The outlook for the late grain harvest improved somewhat following planting because of widespread rain in the heavier producing areas and increased use of irrigation facilities in the areas of less rainfall. Official reports indicated that late-harvested grain crops were progressing satisfactorily. However, the belated planting of some early crops—to be followed by a second crop—extends the maturity of late crops into the period of frost probability, which is even greater this year because of consistent below-normal temperatures during most of the summer. This was particularly true during July, resulting in concerned comment by officials in the northeast area. Furthermore, the delayed harvest period often is subject to unusual weather fluctuations.

Recent weather observations reveal a decline in precipitation during much of July in many areas planted to autumn-harvested crops, particularly in northwest, northeast, and southeast China. These are important grain and industrial crop-producing areas. A similar rainfall pattern occured in 1974 and 1975, resulting in disappointing yields for many crops. On the other hand, above-normal precipitation in the North China Plain has improved crop prospects in that important crop area.

In view of the negative effect of the weather to date on PRC crops—especially grains—even considerable improvement in weather conditions during the remainder of the growing season may not be sufficient to enable the PRC to gather a record late grain harvest.

If the late grain harvest is no better than in 1975, it is estimated that total grain output in the PRC will decline in 1976.

The earthquakes which struck the Peking-Tientsin-Tangshan area on July 28—with subsequent aftershocks—must rank as one of the world's worst earthquake disasters in recent years, but the immediate impact on China's agricultural production and trade was negligible. The area affected is densely populated and the loss of life and damage to housing was devastating, according to preliminary reports.

The impact on agriculture in the immediate area could be severe, but of little consequence to total national production. Deep well irrigation systems are extensive, and a major water control system—the Hai River project—is centered just to the south of the area. Damage to these systems could result in local flooding and a decrease in irrigation capacity.

CORRECTION: "Philippine Copra Crop and Trade Up," page 7, August 9, 1976. Lines 20-21 should read, "while Western Europe was the major importer of cake and meal."

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